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Magnetic and Bathymetric Data from R/V FARNELLA
Cruise FRNL 85-4 in the Puerto Rico and U.S. Virgin
Islands Exclusive Economic Zone

by Kathryn M. Scanlon

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Between November 4th and December, 3rd 1985, the U.S. Geological Survey in cooperation with Great Britain's Institute of Oceanographic Sciences collected over 9500 line kilometers (km) of magnetic and bathymetric data in the Exclusive Economic Zone (EEZ) of Puerto Rico and the U.S. Virgin Islands (Fig. 1). Line spacing was about 37 km in the deep areas (i.e., north of about 19°N and south of about 17.5°N) and as close as 10 km in the shallow areas near the islands (i.e., between about 17.5°N and 19°N). Data were collected on the insular slopes north and south of the islands in water depths greater than about 500 meters (m). North of the islands, the survey area covers parts of the Antilles Outer Ridge and the Puerto Rico Trench; south of the islands, it covers parts of the Muertos Trough and the Venezuelan Basin.

The work was conducted aboard R/V FARNELLA on cruise FRNL 85-4.

Navigation data were acquired by an integrated navigation system using mainly transit satellites, gyro compass, and doppler speed log. Global Positioning System (GPS) data were also used during the few hours each day when at least three GPS satellites were in range.

The magnetic data were collected using a proton precession magnetometer towed about 200 m astern of the ship. The total magnetic field and the magnetic anomaly (calculated using the International Geophysical Reference Field (IGRF) 1985 values for the earth's field) were both recorded in gammas at two-minute intervals.

A 10-kHz towed echo-sounder with a flat-bed wet-paper display was used to record bathymetric information. Depths were measured on the graphic display at six-minute intervals. Additional values at two-minute intervals have been interpolated on a straight line between measured values.

The original data may be examined at the U.S. Geological Survey, Woods Hole, MA 02543. Magnetic tapes of the magnetic data and the digitized bathymetry can be purchased only from the National Geophysical Data Center, 325 Broadway, Boulder, CO 80303, telephone (303)-497-6338.

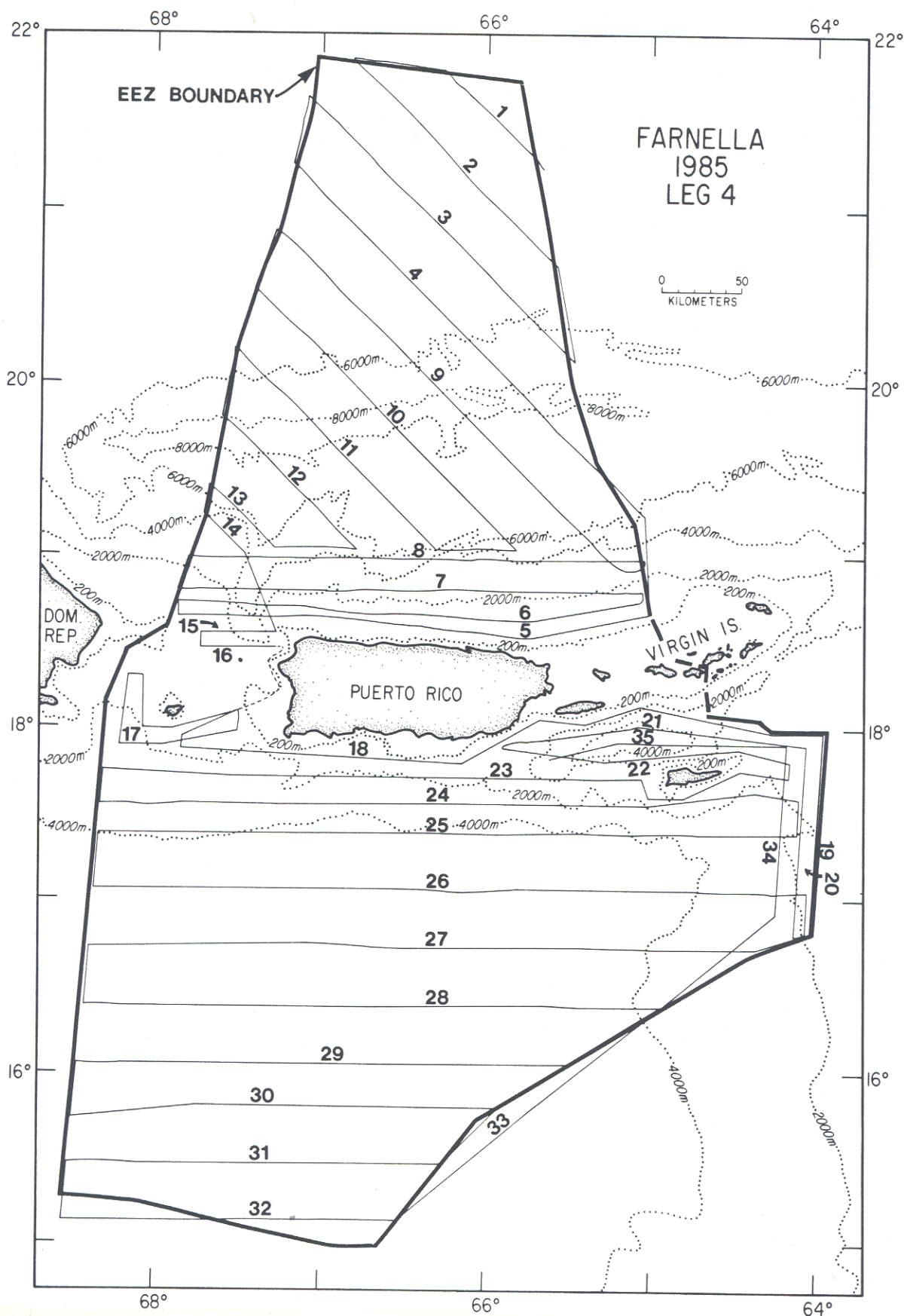


Figure 1. Location map of R/V FARNELLA Cruise FRNL 85-4. Thin solid lines represent the ship's track along which magnetic and bathymetric data were collected. Dotted lines are bathymetric contours in meters. Heavy solid line denotes the outline of the U.S. EEZ.